

**WHAT IS CLAIMED IS:**

1. A welding flux for use in welding stainless steel parts, the welding flux  
5 comprising a base material obtained from manganese peroxide ( $\text{MnO}_2$ ), and at least  
one activator selected from a material group that includes zinc oxide ( $\text{ZnO}$ ), silicon  
dioxide ( $\text{SiO}_2$ ), chromium oxide ( $\text{CrO}_2$ ), titanium dioxide ( $\text{TiO}_2$ ), molybdenum dioxide  
( $\text{MoO}_2$ ), and iron oxide ( $\text{Fe}_2\text{O}_2$ ).
- 10 2. The welding flux as claimed in claim 1, wherein said base material is over  
70wt% in the welding flux.
3. The welding flux as claimed in claim 1, wherein the total amount of said  
at least one activator is below 30wt% in the welding flux.
- 15 4. The welding flux as claimed in claim 1, wherein the particle size of said  
base material and said at least one activator is at least #325.
5. A method of joining two stainless steel members comprising the steps of  
20 a) mixing a welding flux prepared subject to claim 1 in a liquid carrier to  
form a paste-like flux;  
b) applying a thin layer of said paste-like flux over the joint of the stainless  
steel members; and  
c) welding the stainless steel members together using an arc welding torch.

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6. The method of claim 5, wherein said liquid carrier is volatile.

7. A method of joining two stainless steel members comprising the steps of

a) using a foaming agent to make a welding flux prepared subject to claim 1  
5 into a foamed flux;

d) applying a thin layer of said foamed flux over the joint of the stainless  
steel members; and

e) welding the stainless steel members together using an arc welding torch.

10 8. A method of joining two stainless steel members comprising the steps of:

a) applying a welding flux prepared subject to claim 1 over the joint of the  
stainless steel members by using static convergence;

b) welding the stainless steel members together using an arc welding torch.

15 9. A method of joining two stainless steel members comprising the steps of:

a) applying a thin layer of a welding flux prepared subject to claim 1 over  
one side of a thin film base material;

b) adhering said thin film base material to the joint of the stainless steel  
members;

20 c) welding the stainless steel members together using an arc welding torch.